AMENDMENTS TO THE CLAIMS

Claims 1, 12, 13, 20, 41, 42, and 44 are amended herein.

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method for isolating a protein molecule or population of protein or peptide molecules, comprising:

(a) contacting one or more cells comprising protein or peptide molecules with at least one pore-containing matrix, wherein said matrix comprises ~~i)~~ pores having an average size ranging from about 0.1 microns to 1,000 microns in diameter ~~and ii);~~

(b) adding to the at least one pore-containing matrix one or more lysis/disruption/permeabilization compositions or compounds in an amount sufficient to lyse, disrupt or permeabilize the cells; and

(c) ~~(b)~~ subjecting said matrix to conditions that promote the flow of material through said matrix, thereby isolating said protein or peptide molecules.

2. (cancelled)

3. (previously presented) The method of claim 1, wherein said matrix is selected from the group consisting of a porous ceramic matrix, a polysaccharide matrix, polyester matrix, a polyolefin matrix, a sintered polyethylene matrix, a nitrocellulose matrix, a cellulose acetate matrix, a nylon matrix, a cellulose matrix and a silica matrix.

4. (cancelled)

5. (previously presented) The method of claim 1, wherein said pores are from about 1 to about 500 microns in diameter.

6. (previously presented) The method of claim 5, wherein said pores are from about 25 to about 400 microns in diameter.

7. (previously presented) The method of claim 1, wherein said conditions that promote the flow of material through said matrix are selected from the group consisting of addition of an aqueous solution, centrifugation, gravity, vacuum, pressure, and combinations thereof.

8. (previously presented) The method of claim 1, wherein said lysis/disruption/permeabilization composition or said matrix, or both, further comprises one or more detergents.

9. (previously presented) The method of claim 1, wherein said lysis/disruption/permeabilization composition or said matrix, or both, comprises one or more enzymes.

10. (previously presented) The method of claim 9, wherein said enzyme is selected from the group consisting of a nuclease, lyticase, neuraminidase, streptolysin, cellulysin, muanolysin, chitinase, lysozyme, lysostaphin, and zymolyase.

11. (cancelled)

12. (currently amended) The method of claim 1, further comprising:

(c) ~~subjecting~~ adding to said matrix a composition that can disrupt membranes or inclusion bodies ~~to conditions that promote the elution of soluble material from said matrix,~~ in order to generate an eluate comprising solubilized proteins; and

(d) collecting said eluate.

13. (currently amended) The method of claim 12, wherein said ~~one or more lysis/disruption/permeabilization compositions or compounds~~ composition that can disrupt membranes or inclusion bodies comprises a detergent, chaeotropic agent or salt.

14. (previously presented) The method of claim 13, wherein said chaeotropic agent is urea.

15. (cancelled)

16. (previously presented) The method of claim 1, wherein said one or more cells are selected from the group consisting of bacterial cells, yeast cells, fungal cells, animal cells, insect cells, mammalian cells, human cells, cells infected by a virus, transfected cells and plant cells.

17. (previously presented) The method of claim 16, wherein said one or more cells are bacterial cells of a genus selected from the group consisting of *Escherichia*, *Bacillus*, *Staphylococcus*, *Agrobacter*, *Streptomyces*, *Pseudomonas*, *Serratia*, and *Caryophanon*.

18. The method of claim 16, wherein said one or more cells are insect cells selected from the group consisting of Drosophila cells, Spodoptera cells and Trichoplusa cells.

19. (cancelled)

20. (currently amended) A composition for use in isolating a protein or peptide molecule or a population of protein or peptide molecules, said composition comprising:

(a) one or more lysis/disruption/permeabilization compositions or compounds in an amount sufficient to lyse, disrupt, or permeabilize cells; ~~and~~

(b) one or more pore-containing matrices wherein said pores have an average size ranging from about 0.1 microns to 1,000 microns in diameter;and

(c) at least one composition selected from the group consisting of chromatographic resins that bind proteins or peptides, chromatographic resins that bind impurities, chromatographic resins having bound thereto protein modifying reagents, chromatographic resins having bound thereto enzymes, chromatographic resins having bound thereto nucleic acids, chromatographic resins having bound thereto an enzyme substrate, filters, and compositions which detect or quantify the amount of protein or nucleic acid present in the sample.

21. (previously presented) An apparatus for extracting and isolating protein or peptide molecules, comprising:

(a) a housing containing one or more pore-containing matrices, wherein said one or more pore-containing matrices comprise i) pores having an average size ranging from 0.1 microns to about 10,000 microns in diameter, and ii) one or more lysis/disruption/ permeabilization compositions or compounds in an amount sufficient to lyse, disrupt, or permeabilize cells; and

(b) at least one composition selected from the group consisting of chromatographic resins that bind proteins or peptides, chromatographic resins that bind impurities, chromatographic resins having bound thereto protein modifying reagents, chromatographic resins having bound thereto enzymes, chromatographic resins having bound thereto nucleic acids, chromatographic resins having bound thereto an enzyme substrate, filters, and compositions which detect or quantify the amount of protein or nucleic acid present in the sample.

22. (previously presented) The apparatus of claim 21, wherein said housing containing said one or more pore-containing matrices is a tube.

23. (previously presented) The apparatus of claim 21, wherein said one or more pore containing matrices divides said tube into an upper sample application section and a lower sample collection section.

24. (previously presented) The apparatus of claim 21, wherein said one or more pore containing matrices is provided in a format selected from the group consisting of: an insert, a frit, a plug, a cartridge, a swab, a membrane, a filter, a bead, and a gel.

25. (previously presented) The apparatus of claim 21, wherein said one or more pore containing matrices is selected from the group consisting of: polyester, polyolefin, scintered polyethylene, nitrocellulose, cellulose acetate, nylon, cellulose, porous ceramic, silica, polysaccharide, and polymer matrices.

26. (previously presented) The apparatus of claim 21, wherein said one or more pore containing matrices is solid.

27. (previously presented) The apparatus of claim 21, wherein said one or more pore containing matrices is semi solid.

28. (cancelled)

29. (original) The apparatus of claim 23, wherein said sample collection section has an access port formed therein.

30. (cancelled)

31. (previously presented) The apparatus of claim 21, wherein said cell lysis/disruption/permeabilization composition is selected from the group consisting of a detergent, an enzyme, an inorganic salt, an acid, a base, and a buffering agent.

32. (previously presented) The apparatus of claim 21, wherein said housing is selected from the group consisting of a tube, a bottle, a vial, an ampule, a microspin tube, a well, a column, a mini-column, a multi-well plate, a bag, a box, and a carton.

33. (previously presented) A kit comprising the apparatus of claim 21.

34. (previously presented) The kit of claim 33, further comprising at least one composition selected from the group consisting of chromatographic resins that bind proteins or peptides, chromatographic resins that bind impurities, chromatographic resins having bound thereto protein modifying reagents, chromatographic resins having bound thereto enzymes, chromatographic resins having bound thereto nucleic acids, chromatographic resins having bound thereto an enzyme substrate, filters, and compositions which detect or quantify the amount of protein or nucleic acid present in the sample.

35. (previously presented) The kit of claim 33, further comprising at least one composition selected from the group consisting of antibodies which bind to the protein or peptides of the invention, substrates for said protein or peptides, ligands for said proteins or peptides, cofactors for said protein or peptides, nucleic acid molecules which bind to said proteins or peptides, inhibitors of said proteins or peptides, enzymes which modify said proteins or peptides, compositions which modify said proteins or peptides, compositions which bind said proteins or peptides, compositions which are bound by said proteins or peptides, and compositions capable of being used for detecting or quantifying the amount of protein or nucleic acid present in a sample.

36. (previously presented) The kit of claim 33, further comprising one or more collection tubes.

37. (previously presented) The kit of claim 33, further comprising one or more enzymes.

38. (cancelled)

39. (previously presented) The apparatus of claim 21, wherein said housing is a 96-well multi-well plate.

40. (previously presented) The kit of claim 37, wherein said enzyme is selected from the group consisting of a nuclease, lyticase, neuraminidase, streptolysin, cellulysin, mutanolysin, chitinase, glucalase, lysozyme, lysostaphin, and zymolyase.

41. (currently amended) The ~~method~~ apparatus of claim 21, wherein said pores are from about 1 to about 500 microns in diameter.

42. (currently amended) The ~~method~~ apparatus of claim 41, wherein said pores are from about 25 to about 400 microns in diameter.

43. (previously presented) The method of claim 1, wherein said pores are from about 0.1 to about 10 microns in diameter.

44. (currently amended) The ~~method~~ apparatus of claim 21, wherein said pores are from about 0.1 to about 10 microns in diameter.